University College Hospital UCH, Community Health Officer 300l , 2025/2026.

Epidemiology and communicable disease, Assignment

Ogunlana Akinola Okikiola

Q1. Discuss communicable diseases under the following headings:

Definition

Causative agents

Modes of transmission

Methods of prevention and control

Communicable Diseases

Definition
Communicable diseases are illnesses that can be transmitted from one person to another, or from animals and the environment to humans. They are caused by infectious agents such as bacteria, viruses, fungi, or parasites. These diseases spread through various means like direct contact, contaminated food or water, insect bites, or exposure to infected bodily fluids.

Causative Agents

The agents responsible for communicable diseases include:

Bacteria: These are single-celled organisms that can cause diseases such as tuberculosis, cholera, and typhoid fever.
Viruses:Smaller than bacteria, viruses cause illnesses like measles, influenza, HIV/AIDS, and COVID-19.
Fungi: These cause infections such as ringworm, athlete's foot, and candidiasis.
Parasites: These are organisms that live in or on a host, causing diseases such as malaria, schistosomiasis, and amoebiasis.

Modes of Transmission

Communicable diseases can spread in several ways:

1. **Direct contact:** Through touching, kissing, sexual contact, or exposure to infected blood or body fluids.
2. **Indirect contact:** Via contaminated objects such as utensils, doorknobs, or medical instruments.
3. **Airborne transmission:** When infectious agents are spread through droplets from coughing, sneezing, or talking.
4. **Vector-borne transmission:** Through insects or animals that carry disease-causing organisms, such as mosquitoes transmitting malaria.
5. **Food and water-borne transmission:** By consuming contaminated food or water, leading to diseases like cholera or typhoid.

Methods of Prevention and Control

Preventing and controlling communicable diseases involves both personal and community-based efforts.

Good hygiene: Regular handwashing with soap and clean water helps prevent the spread of germs.
Safe food and water practices: Properly cooking food and drinking safe water reduces infection risk.
Vaccination: Immunization protects individuals and communities from diseases such as measles, polio, and hepatitis B.
Vector control: Using insecticide-treated nets, proper waste disposal, and eliminating stagnant water can reduce mosquito breeding.
Isolation and treatment: Infected individuals should receive prompt medical care and, if necessary, be isolated to prevent further spread.
Health education: Creating awareness about how diseases spread encourages people to adopt healthy habits and seek early treatment.

Q2.Explain the terms endemic, epidemic, and pandemic, giving examples.

Endemic

Refers to a disease that is constantly present within a particular area or population. It doesn't spread rapidly or affect large numbers at once, but it remains ongoing in that region. For example, malaria is endemic in many parts of sub-Saharan Africa because it occurs regularly and is always present there.

Epidemic

Occurs when a disease spreads rapidly and affects a large number of people within a specific community, region, or country at the same time. It goes beyond what is normally expected. For instance, the Ebola outbreak in West Africa between 2014 and 2016 was an epidemic because it spread quickly and infected many people within a limited period and region.

Pandemic:

Is a disease outbreak that spreads across several countries or continents, affecting a large portion of the world's population. It's much wider in scope than an epidemic. A good example is the COVID-19 pandemic, which began in late 2019 and spread across nearly every country in the world, leading to global disruption and millions of deaths.

Q3. Define and distinguish between incidence and prevalence. Explain their importance in epidemiology with examples.

Incidence

Refers to the number of new cases of a particular disease that occur within a specific period in a defined population. It focuses on how frequently new infections or illnesses appear over time. For instance, if 50 new cases of malaria are reported in a village of 1,000 people within one month, that figure represents the incidence of malaria for that period.

Prevalence

On the other hand, refers to the total number of people who have a particular disease at a given point in time both new and existing cases. It gives an overall picture of how widespread a disease is in a population.
For example, if 200 people in that same village already have malaria at the end of the month, regardless of when they got infected, that number represents the prevalence.

The difference between the two lies in what they measure: incidence tells us about the rate of new cases, while prevalence shows how common the disease is in total.

In epidemiology, both are very important. Incidence helps identify the risk of contracting a disease and is useful for studying causes and evaluating preventive measures.

For example, a rising incidence of cholera may suggest poor sanitation or contaminated water sources.

Prevalence, however, helps public health officials understand the burden of a disease in a community and plan for healthcare needs.

For instance, knowing the prevalence of HIV helps determine how many people require ongoing treatment and support.

Together, incidence and prevalence give a clear picture of how diseases spread, persist, and affect communities over time.

Q4. Describe the measures used in controlling communicable diseases at the community level

Controlling communicable diseases at the community level involves several coordinated measures aimed at preventing the spread of infections and protecting public health.

One important measure is health education. People need to be informed about how diseases spread and how to protect themselves. Simple practices like regular handwashing, proper waste disposal, safe food handling, and personal hygiene can go a long way in reducing infection rates.

Environmental sanitation

Is another key measure. This includes keeping the surroundings clean, ensuring access to safe drinking water, and maintaining proper sewage systems. Clean environments help reduce breeding places for disease-carrying insects like mosquitoes and flies.

Immunization programs

Are also vital. Vaccines protect individuals and communities from diseases such as measles, polio, and tuberculosis. When a large percentage of the community is vaccinated, it creates herd immunity, making it harder for diseases to spread.

Early detection and prompt treatment

Are equally important. Identifying cases early through regular health screenings or surveillance allows for quick medical attention, which not only helps the patient recover but also prevents the disease from spreading to others.

Isolation and quarantine

Are sometimes necessary when dealing with highly contagious diseases. Infected individuals may be isolated to stop transmission, while those who have been exposed may be quarantined for observation.

NB: vector control such as using insecticide-treated nets, spraying, and eliminating stagnant water helps reduce the spread of diseases transmitted by insects, like malaria and dengue fever.

Q5. Write short notes on the following:

a. Epidemiological triangle

b. Vehicle-borne transmission

c. Point prevalence and period prevalence

a. Epidemiological Triangle

The epidemiological triangle is a model used to understand how diseases spread. It consists of three main elements:

- Agent
- Host
- Environment

The agent is the cause of the disease, such as bacteria, viruses, or parasites.

The host refers to the person or organism that can get the disease.

The environment includes all external factors that help the disease spread, like water, climate, or living conditions. A change in any of these three components can affect how an infection occurs or spreads.

b. Vehicle-Borne Transmission

Vehicle-borne transmission happens when a disease-causing agent is carried by a common inanimate object or substance, such as food, water, blood, or utensils. For example, cholera can spread through contaminated water, and hepatitis B can be transmitted through infected blood. In this type of transmission, the vehicle serves as a medium that carries the infectious agent from one person to another.

c. Point Prevalence and Period Prevalence

Point prevalence refers to the number of existing cases of a disease in a specific population at a particular point in time.

For instance, counting how many people have malaria in a village on June 1st represents point prevalence.
Period prevalence, on the other hand, measures the number of people who had the disease at any time during a specified period, such as a month or a year. It includes both old and new cases that occurred within that timeframe.

By Ogunlana Akinola Okikiola